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Abstract:

The present invention relates to separator-electrode units for lithium batteries and also to a process for  
5 their production.

The separator-electrode units comprise a porous electrode which is useful as a positive electrode (cathode) or negative electrode (anode) in a lithium  
10 battery and a separator layer applied to this electrode and are characterized in that the separator-electrode units comprise a purely inorganic separator layer which comprises at least two fractions of metal oxide particles which differ from each other in their average  
15 particle size and/or in the metal. More particularly, the separator layer comprises metal oxide particles having an average particle size ( $D_g$ ) which is greater than the average pore size ( $d$ ) of the pores of the porous positive electrode that are bonded together by  
20 metal oxide particles having a particle size ( $D_k$ ) which is smaller than the pores of the porous electrode.

The separator-electrode unit of the invention has the advantage that it is simple to manufacture as one  
25 component and, since the step of laminating the separator onto the electrode can be omitted, that it can comprise a large variation of materials. In addition, a separator-electrode unit according to the invention possesses excellent mechanical stability and  
30 a very low separator thickness, which is why it can even be used in lithium high energy batteries.